at the University at Strasburg under the superintendence of Dr. G. Gerland.

The style of record given by the Milne seismograph is abundantly illustrated on Plates V and VI, which contains records of the following earthquakes:

1. January 24–25, 1899. This was the great earthquake at the City of Mexico. This severe shock was not appreciable to any of the Weather Bureau observers, but it made well-marked records on the seismographs at Toronto and Victoria. It reached Toronto at 23:50:24, Greenwich civil time, and attained its maximum at 0:19:55 of the 25th. The corresponding times for Victoria were 23:51:7 p. m. of the 24th and 0:2:54, Greenwich civil time, 25th. At the Isle of Wight the shock arrived at 0:24:42, Greenwich civil time, of the 25th, according to a letter from Mr. Stupart.

2. April 16. This disturbance began at Toronto 13:48:59, Greenwich civil time, April 16; maximum, 14:2:48; ended, 15:22:10. At Victoria the disturbance began at 13:42:30, Greenwich civil time, and ended at 15:33:42. This tremor was apparently of Japanese origin, according to Mr. Stupart.

3. June 5. Toronto: began June 5, 4:42:27, Greenwich civil time; maximum, 4:54:16; ended, 7:3:51. Victoria, began June 5, 4:48:10, Greenwich civil time; maximum, 5:9:0; end, 6:46:1. This tremor may have been of West Indian origin, according to Mr. Stupart; it occurred at the close of June 4, local reckoning, at Toronto and Victoria, but early on June 5, by Greenwich time.

4. June 5. Toronto: began, 15:7:54; maximum, 15:16:0; end, 17:17:?. Victoria: began, 15:13:1; maximum, 15:30:47; end, 16:12:43.

5. June 14. Toronto: began, 11:13:48; maximum, 11:23:0; ended, 13:18:57. Victoria: began, 11:17:25; maximum, 11:57:32; ended, 13:37:42.

THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Chief of Division of Records and Meteorological Data.

There was a very marked fall in pressure from April to May, 1899, over practically the whole of the United States, the monthly mean for the central and southern Rocky Mountains, the eastern foothills, and the plains being from .05 to .12 inch lower than during the preceding month. As the fall in pressure was greatest in the central Rocky Mountain region and least on the coasts, the chart of monthly distribution, No. IV, naturally shows a marked depression central in Colorado, with rather strong gradients in all directions, except to the southward. The chart of monthly pressure distribution is, in fact, an excellent type of certain winter lows that strike the continent about midway of the California coast and pass across the country from ocean to ocean. The weather of the month was not greatly unlike what is generally experienced with a similar distribution of pressure for a single day. To the northward of the region of lowest pressure it was cold, wet, and generally disagreeable. In the Gulf, South Atlantic, Middle Atlantic, and New England States warm and generally dry weather prevailed, while heavy rains were experienced in the panhandle of Texas, Oklahoma, and generally northeastward of Colorado. About the usual number of cloud bursts, destructive hailstorms, severe local storms, and tornadoes were reported. The electrical storms of the month were rather more numerous and violent than usual.

TEMPERATURE OF THE AIR.

The weather continued cool and unseasonable in the Northwest, this being the fourth consecutive month with temperature decidedly below normal. The greatest departure from normal conditions was in Montana, in which State there was an accumulated deficiency in temperature since January 1 of 1,184°, or an average of nearly 8° per day. The snowfall in Montana, western Wyoming, and eastern Idaho was unusually heavy, as may be seen by reference to Chart VIII. Minimum temperatures as low as 3° in Colorado and 7° in Montana were observed at single stations. The temperature was relatively low on the Pacific coast and generally throughout the Plateau region. Southward and eastward from central Colorado temperature was above normal, the regions of greatest excess being the Gulf States and the Ohio Valley and Tennessee.

In Canada.—Professor Stupart says:

The mean temperature of May was from 2° to 6° below average in Manitoba, the Northwest Territories and British Columbia, and a little above average in Ontario, Quebec, and the larger portion of the Maritime Provinces. Stations in southern Alberta show the greatest departure below, and those in central Ontario the greatest departure above average. The weather of the Northwest Territories was marked by two cold spells, the first of which occurred during the first few days of the month, when the temperature fell to 12° at Calgary, 10° at Edmonton, and 21° at Qu'Appelle; and the second during the 12th and few following days, when 14° was recorded at Calgary, 15° at Edmonton, and 21° at Prince Albert and Winnipeg. This latter cold spell spread rapidly eastward across the Dominion, and was pronounced in Ontario from the 14th up to about the 21st. The last heavy frost occurred in the Northwest and Manitoba about the 19th.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	54.1	+ 0.2	— 1.1	— 0.2
Middle Atlantic	12	62.4	+ 0.9	— 3.5	— 0.8
South Atlantic	10	72.4	+ 2.1	— 3.3	— 0.7
Florida Peninsula	7	78.5	+ 2.7	+ 0.4	+ 0.1
East Gulf	7	76.9	+ 4.3	— 6.7	— 1.3
West Gulf	7	76.5	+ 3.9	— 6.3	— 1.3
Ohio Valley and Tennessee	12	68.5	+ 3 4	— 5.7	— 1.1
Lower Lake	8	58 5	+ 1.7	+ 0.1	0.0
Upper Lake	9	53.5	+ 2.1	— 6.0	— 1.2
North Dakota	7	51.7	— 1.8	—17.5	— 3.5
Upper Mississippi	11	63.1	+ 1.6	—10.4	— 2.1
Missouri Valley	10	62.6	+ 2.1	—12.6	— 2.5
Northern Slope	7	50.9	— 2.5	—23.2	— 4.6
Middle Slope	6	64.7	+ 2.6	—11.0	— 2.2
Southern Slope	6	70.5	+ 1.8	+ 1.2	+ 0.2
Southern Plateau	13	62.4	— 4 5	— 3.4	— 0.7
Middle Plateau	9	51.7	— 5.0	— 8.7	— 1.7
Northern Plateau	10	49.7	— 5.9	— 9.8	— 2.0
North Pacific	9	49.5	— 4.7	— 8.6	— 1.7
Middle Pacific	5	54.9	— 3.5	— 1.3	— 0.3
South Pacific	4	58.6	— 3.8	— 1.7	— 0.3

PRECIPITATION.

The area over which rain was in excess of the normal is probably a little less than the area over which rainfall was below the normal amount. Considered by districts, the minus departures are greater than the positive departures as 2 to 1. The districts having the greatest negative departures are the east Gulf, 2.8 inches; Florida peninsula, 2.9; New England, 1.8. The districts having the greatest positive departures are upper Mississippi valley, 2.5; North Dakota, 1.1; southern Slope, 1.2; northern Slope, and north Pacfic, 1.1, respectively.

On the whole the month should be classed as one of about

normal precipitation. The area of deficient rainfall includes the Gulf States, eastern Tennessee, and thence northeastward to and including New England, a region in which, by reason of the normal precipitation being slightly greater than is demanded by the needs of agriculture, minus departures have not the same value that they would have in regions of scanty precipitation.

Torrential rains fell in a number of places, swelling creeks and small streams to unusual proportions. Live stock, fences, and railroad tracks were the greatest sufferers.

In Canada.—Prof. R. F. Stupart says:

Throughout the Northwest Territories the precipitation was much in excess of the average for May, and this was particularly the case in southern Alberta, where it was several times greater than the average. Over the larger portions of Manitoba the rainfall was about average, some districts reporting a small excess, and others a small deficiency. A heavy snowfall, 20.00 inches at Qu'Appelle, and 9.00 inches at Prince Albert, occurred in Assiniboia and Saskatchewan between the 2d and the 4th, and a smaller quantity fell in many parts of the Territories and Manitoba between the 12th and 14th. In Ontario generally the rainfall was above average to a small amount, but locally, in the counties of Elgin, Lambton, and Bruce there was a deficiency. From the Ottawa Valley eastward, it was everywhere less than the average—at Montreal about one-half, and in the more eastern portions of Quebec even less than one-half the average. In the Maritime Provinces a deficiency was pretty general but not so pronounced as along the St. Lawrence.

The numerical values of total precipitation and total depth of snowfall are given in Tables I and II, and the geographic distribution is graphically shown on Charts III and VIII.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	10	1.82	50	−1.8	−0.2
Middle Atlantic	12	2.36	64	−1.3	−0.5
South Atlantic	10	2.44	60	−1.6	−0.8
Florida Peninsula	7	0.88	23	−2.9	+0.2
East Gulf	7	1.44	34	−2.8	−7.0
West Gulf	7	3.55	80	−0.9	−4.4
Ohio Valley and Tennessee	12	3.37	87	−0.5	−0.2
Lower Lake	8	3.92	115	+0.5	−0.6
Upper Lake	9	3.60	109	+0.3	−1.9
North Dakota	7	3.64	143	+1.1	−0.5
Upper Mississippi	11	6.62	161	+2.5	+1.2
Missouri Valley	10	4.53	105	+0.2	−1.9
Northern Slope	7	3.53	145	+1.1	+1.0
Middle Slope	6	3.72	106	+0.2	−1.6
Southern Slope	6	4.33	138	+1.2	−1.3
Southern Plateau	9	0.08	17	−0.4	−1.9
Middle Plateau	13	0.90	90	−0.1	+0.5
Northern Plateau	10	1.46	94	−0.1	−0.4
North Pacific	9	4.10	137	+1.1	+5.1
Middle Pacific	5	1.17	75	−0.4	−1.8
South Pacific	4	0.08	21	−0.3	−2.2

HAIL.

Some of the hailstorms of the month were very destructive. Those which visited portions of Illinois, Missouri, and Kentucky on the 7th and 8th were quite severe, and wrought serious damage to growing crops and vegetables, besides breaking many windows.

A heavy hailstorm swept over Cheyenne, Wyo., on the 19th.

The storms of the 21st and 22d were also very severe, especially in parts of Saline, Marion, Chase, Butler, Elk, and Chatauqua counties, Kans. In the counties named torrents of rain fell soon swelling the streams to overflowing, and drowning probably 1,000 head of live stock. Five hundred and ten cattle were drowned in one bunch in Butler County. The cattle went into a draw and were overcome by the flood of water and icy hail. Some of them when found were covered by drifts of hail, and chunks of ice to a depth of from 10 to 12 feet.

The following are the dates on which hail fell in the respective States:

Alabama, 12, 18, 21. Arkansas, 7, 9, 10, 11, 18, 22, 28, 29, 30, 31. California, 1, 4, 5, 14, 24. Colorado, 5, 6, 13, 16, 18, 19, 20, 22, 26, 27. Connecticut, 2. Delaware, 16. District of Columbia, 8, 16, 17, 18. Florida, 14, 15, 19. Georgia, 4, 5, 13, 14, 23. Idaho, 1, 2, 6, 8, 11, 12, 13, 16, 24, 25, 29, 30. Illinois, 1, 2, 3, 4, 7, 14, 16, 17, 21, 27, 28, 29, 30, 31. Indiana, 1, 4, 7, 8, 17, 28, 29, 31. Iowa, 2, 7, 14, 15, 16, 17, 21, 27, 28, 29, 30. Indian Territory, 28, 31. Kansas, 2, 4, 7, 9, 10, 11, 13, 17, 20, 22, 23, 24, 25, 26, 28, 29, 30, 31. Kentucky, 4, 6, 7, 8, 30, 31. Louisiana, 12, 23. Maryland, 2, 8, 9, 16. Massachusetts, 2. Michigan, 1, 13, 15, 16, 28, 29. Minnesota, 3, 9, 10, 15, 16, 21, 22, 26, 27, 30, 31. Mississippi, 7, 10, 12, 23. Missouri, 1, 3, 6, 7, 9, 10, 12, 14, 17, 18, 20, 21, 22, 23, 24, 25, 27, 28, 29, 30, 31. Montana, 2, 25, 26, 29. Nebraska, 2, 5, 9, 10, 13, 14, 15, 17, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 31. Nevada, 1, 6, 19, 26. New Jersey, 2, 11, 15, 23, 28. New York, 1, 2, 21, 22, 25, 28. North Carolina, 2, 3, 4, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 21, 22, 23, 24, 25, 26, 28, 29, 30. North Dakota, 15, 24, 25, 26, 30. Ohio, 1, 2, 8, 16, 17, 27, 28, 29, 30, 31. Oklahoma, 1, 28, 29, 31. Oregon, 1, 5, 8, 10, 11, 12, 13, 14, 16, 17, 18, 19, 23, 25. Pennsylvania, 2, 16, 28, 29. South Carolina, 6, 22, 30, 31. South Dakota, 2, 3, 9, 13, 14, 15, 20, 21, 25, 26, 27, 29, 30. Tennessee, 4, 6, 8, 10, 12, 21, 22, 28, 29, 30, 31. Texas, 5, 6, 7, 10, 11, 19, 21, 22, 23, 28. Utah, 7, 15, 19, 25, 27, 28. Virginia, 3, 4, 5, 8, 13, 16, 29, 31. Washington, 1, 11, 12, 13, 15, 17, 23, 24. West Virginia, 13. Wisconsin, 9, 15, 16, 17, 25, 26, 27, 29, 31. Wyoming, 6, 11, 15, 16, 19.

SLEET.

The following are the dates on which sleet fell in the respective States:

California, 1, 5, 7, 14, 18, 24, 25, 27. Idaho, 11, 29. Minnesota, 14. New Mexico, 2. North Dakota, 1, 2, 3, 4, 12, 15. Oregon, 1, 13. South Dakota, 3, 14, 21. Utah, 1, 2, 6, 16, 19, 20, 27. Washington, 13. Wyoming, 2.

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Amarillo, Tex	2	53	sw.	Mount Tamalpais, Cal.	18	60	nw.
Do	25	54	w.	Do	22	50	nw.
Buffalo, N. Y	29	55	sw.	Do	28	52	nw.
Chicago, Ill	1	50	sw.	Do	29	50	nw.
Do	26	53	s.	New York, N. Y	2	56	nw.
Do	28	56	s.	Northfield, Vt	1	50	sw.
Cleveland, Ohio	16	58	w.	Oklahoma, Okla	30	52	se.
Dodge, Kans	25	57	se.	Pierre, S. Dak	12	61	nw.
Hannibal, Mo.	28	50	s.	Do	20	58	se.
Havre, Mont	11	63	nw.	Do	21	54	se.
Idaho Falls, Idaho	11	52	sw.	Do	30	53	w.
Lexington, Ky	12	50	nw.	Point Reyes Light, Cal.	1	59	nw.
Mount Tamalpais, Cal.	1	55	nw.	Do	5	60	nw.
Do	2	66	nw.	Do	6	50	nw.
Do	3	60	nw.	Do	12	60	nw.
Do	4	50	nw.	Do	13	60	nw.
Do	5	59	nw.	Do	14	75	nw.
Do	6	50	nw.	Do	15	60	nw.
Do	11	60	n.	Do	18	54	nw.
Do	12	78	nw.	Do	19	54	nw.
Do	13	66	nw.	Do	20	54	nw.
Do	14	55	nw.	Salt Lake City, Utah	29	56	w.
Do	16	50	nw.	Williston, N. Dak	11	50	nw.
Do	17	66	nw.	Do	12	54	nw.

LOCAL STORMS AND TORNADOES.

A superficial reading of the various press dispatches in the

newspapers might easily convey the impression that tornadoes were unusually widespread and destructive. When the facts are ascertained, however, it does not appear that the storms were either especially frequent or violent. From the 1st to the 27th but one really violent tornado occurred. Beginning with the last-named date a stormy period set in, continuing intermittently until the end of the month.

Sixteen persons were killed by tornadoes during the month and about 34 injured, while the property loss was about $130,000. For the same time 104 persons were killed by lightning stroke and 88 injured.

Some of the more important details regarding the storms of the month are given below:

1st.—A severe local storm, probably a straight line gale, with small local whirls, destroyed some property at Wingate, Runnels County, Tex., moved from northwest to southeast.

6th.—A straight line gale from the northwest swept over portions of Oklahoma. The greatest violence was manifested at Chickasha where one person was injured and a number of frail buildings damaged.

8th.—A severe local storm occurred in Ballinger, Runnels County, Tex., on this date. No lives were lost; the damage was about $5,000.

9th.—A severe local storm passed through Coldwater, Comanche County, Kans., destroying about 20 building, mostly barns, and killing one person; moved from northwest to southeast; property loss about $10,000.

12th.—A number of severe local storms occurred in Tennessee, and a minor tornado was observed 8 miles northwest of Mount Sterling, Ky. A large tobacco barn was destroyed by the tornado, but little other damage was done. At 5 p. m., central time, on the same date, another tornado was observed 7 miles east of Mount Sterling. One person was killed, the limb of a tree striking him as he was driving near it. (Report of James O'Connell, voluntary observer).

16th.—A tornado formed about 2 miles north of Greely, in Delaware County, Iowa, and moved thence easterly and northeasterly, passing near the village of Colesburg. Nine buildings were totally destroyed and 18 badly damaged. Five persons were killed and 12 injured. The property loss was very heavy, probably $30,000. The path of great destruction was, on an average, 30 rods wide and 12½ miles long.

On the same date a straight line gale, with numerous local whirls, entered the State of Ohio at the northwestern corner, moving across the State with an average velocity of 50 miles per hour, and reappearing the following day in western Pennsylvania. Frail buildings, roofs, and chimneys suffered by the violence of the wind, and the property loss by hail and lightning was very great in some localities. In western Pennsylvania 5 persons were killed by lightning.

27th.—A period of severe local storms and tornadoes began on this date, continuing the next day; beginning again on the 30th, and continuing throughout the following day. As has been noted in these columns on previous occasions, tornadic activity frequently begins at a number of places along a north and south line and at nearly the same hour of local mean time. In this case three groups of tornadoes formed along the ninety-ninth meridian about 6 o'clock p. m., mean local time. The most northerly group had its origin in Brule County, S. Dak. The direction of movement was southward. Seven persons were killed within a distance of about 3 miles. Several buildings in the path of the storm were totally demolished, involving a loss to buildings and live stock together of about $8,000.

The second group, of which there were two distinct storms, formed in south-central Nebraska. The first storm was observed in Hamilton County, Nebr., the funnel cloud forming about 7 o'clock, central time. It moved northeastward in a path about 16 miles long, destroying many substantial residences in that distance. The coming of the storm was plainly visible and no lives were lost, although the property loss will probably aggregate $25,000.

A second storm was observed a little later in the day about 5 miles southwest of Minden, in Kearney County. It was not so severe as the one just mentioned; no lives were lost, and the property loss was small, probably not more than $2,500.

The third group also consisted of a pair of tornadoes, having their origin in Day and Woods counties, Okla., respectively. As in the case of the Nebraska tornadoes, the storm which formed first occurred farthest to the eastward, viz, in Woods County, between Augusta and Aline. It was viewed by a great many persons from a safe distance; its movement was very slow, being in full view about forty minutes. No casualties, and a small property loss, owing to the primative character of the buildings in that part of the country.

The second tornado crossed the Canadian River in the vicinity of Grand, the county seat of Day County. No casualties; property loss very small.

Severe local storms also occurred in Iowa, the one noted in Jackson County having the characteristics of a tornado. Property loss not large.

28th.—The severe storms of this date were confined mostly to Iowa. About 3:45 p. m. a tornado, of moderate violence only, passed through Jasper County, Iowa, causing a property loss of about $3,500. No casualties.

At 5:15 p. m., a small tornado passed through portions of Keokuk County, Iowa, injuring slightly six persons and destroying property to the amount of $2,000.

Another small tornado visited Johnson County, Iowa. Property loss about $2,000.

A straight line gale swept over portions of Wright County, Iowa, destroying a great number of buildings and injuring three persons. The property loss in this case was considerable, a low estimate placing it at $30,000.

29th.—A furious storm of wind, rain, and hail visited Buffalo, N. Y., at 3:40 p. m. The wind rose from almost calm to a velocity of 55 miles per hour in seven minutes. At 4:17 p. m. a sudden squall occurred during which the wind attained an estimated velocity of 80 miles per hour from the southwest. While the storm was at its height a squall struck and almost totally demolished the Buffalo Cast Iron Pipe Company's large brick building, 350 feet long by 75 feet wide and 45 feet high. The walls of the building were 14 inches thick, and braced with iron rods. Two men were severely injured and a large number had a very narrow escape from injury.

30th.—A small tornado passed through portions of Union County, S. Dak., on the evening of this date. No casualties; property loss about $4,000.

Dixon County, Nebr., was visited by a tornado about 6:00 p. m., central time, the storm moving across the county in a northeasterly direction in a path about 15 or 20 rods wide at the beginning, increasing to 40 rods later on. One person was injured and property valued at about $10,000 was destroyed. Several funnel clouds were observed.

A tornado formed about 10:00 p. m., near Corning, Holt County, Mo., moving thence northeasterly into Atchison County. The path of the storm was from 100 feet to ¼ mile wide and 10 miles long. One person was killed and one severely injured.

Two groups of tornadoes formed on the western border of Iowa between 7:00 and 8:00 p. m., central time. The first one, in point of time, was observed south of Kingsley, Plymouth County. Owing to its being plainly visible there was no loss of life, although farm property valued at $7,000 was destroyed. The second manifestation of tornadic force in the line of the first group was observed in Pocahontas County,

to the eastward of Plymouth County, at 9:15 p. m. Four persons were injured and property valued at $5,000 was destroyed.

The second group of tornadoes was first observed in Mills County, about 100 miles south of Plymouth County. One person was killed near Mineola, and eight others injured. Property loss, about $3,000. A tornado was next observed to the northeastward in Cass and Adair Counties, at 10:30 p. m. Six persons were injured and the property loss was about $5,000.

Severe local storms occurred at various other points in Iowa, the stormy conditions drifting eastward and dying out in Illinois, about 3 a. m. of the following day.

HUMIDITY.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
	%			%	
New England	74	− 4	Missouri Valley	70	+ 5
Middle Atlantic	71	0	Northern Slope	61	+ 4
South Atlantic	75	+ 1	Middle Slope	57	− 3
Florida Peninsula	75	− 2	Southern Slope	62	+ 4
East Gulf	73	0	Southern Plateau	30	−10
West Gulf	79	+ 6	Middle Plateau	42	− 3
Ohio Valley and Tennessee	69	+ 1	Northern Plateau	60	+ 2
Lower Lake	69	− 1	North Pacific Coast	79	+ 1
Upper Lake	75	+ 3	Middle Pacific Coast	66	− 6
North Dakota	67	+ 3	South Pacific Coast	69	+ 1
Upper Mississippi	70	+ 3			

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table VII, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 5,305 thunderstorms were received during the current month as against 2,871 in 1898 and 1,962 during the preceding month.

The dates on which the number of reports of thunderstorms for the whole country were most numerous were: 29th, 411; 28th, 311; 31st, 309; 2d, 295.

Reports were most numerous from: Illinois, 382; Ohio, 377; Missouri, 322; Iowa, 289; Michigan, 285.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, 20th to 28th.

The greatest number of reports were received for the following dates: 3d, 42; 4th, 21; 1st, 18; 15th, 13.

Reports were most numerous from: Washington, 11; Minnesota, 10; New Hampshire, South Dakota, Wisconsin, 8.

In Canada.—Auroras were reported as follows: Yarmouth, 15th; Father Point, 3d, 4th, 5th, 7th, 11th, 15th; Quebec, 3d, 4th, 5th, 7th, 15th; Montreal, 3d, 4th, 15th; Toronto, 3d; Kingston, 4th, 11th, 15th; Port Stanley, 3d; Minnedosa, 12th, 13th; Medicine Hat, 3d, 4th, 5th; Swift Current, 4th; Banff, 3d; Prince Albert, 1st, 5th; Battleford, 5th.

Thunderstorms were reported as follows: Halifax, 1st, 3d; Chatham, 26th; Quebec, 2d, 26th, 30th; Montreal, 2d; Toronto, 1st, 16th, 28th, 29th; White River, 1st, 31st; Kingston, 1st; Port Stanley, 11th, 16th, 17th, 27th, 29th, 31st; Saugeen, 11th, 28th, 29th; Parry Sound, 1st, 29th; Port Arthur, 17th; Winnipeg, 26th; Ottawa, 26th, 30th; Qu'Appelle, 26th; Medicine Hat, 9th, 25th, 26th; Swift Current, 25th, 27th; Calgary, 24th.

SUNSHINE AND CLOUDINESS.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	5.4	−0.1	Missouri Valley	6.1	+0.7
Middle Atlantic	5.3	+0.1	Northern Slope	6.0	+0.6
South Atlantic	4.4	0.0	Middle Slope	4.4	−0.4
Florida Peninsula	3.5	−1.0	Southern Slope	4.2	−0.3
East Gulf	3.4	−0.9	Southern Plateau	3.9	+0.7
West Gulf	6.0	+1.1	Middle Plateau	5.9	+1.8
Ohio Valley and Tennessee	5.8	+0.7	Northern Plateau	6.1	+0.5
Lower Lake	5.8	+0.6	North Pacific Coast	7.9	+2.0
Upper Lake	5.6	+0.1	Middle Pacific Coast	4.0	−0.2
North Dakota	6.0	+0.7	South Pacific Coast	3.5	−0.7
Upper Mississippi	6.1	+0.9			

DESCRIPTION OF TABLES AND CHARTS.

By ALFRED J. HENRY, Chief of Division of Records and Meteorological Data.

For text descriptive of tables and charts see page 164 of REVIEW for April, 1899.